

Changes of State

Change of a substance from one physical form to another.

This involves a change in energy-
either adding or removing energy
(heat)

Solid to Liquid to Gas = adding
energy each time

Gas to Liquid to Solid = decreasing
energy each time

Endothermic-Adding or Increasing Energy

1. **Melting**-solid to a liquid

Adding energy to a solid increases the temperature and moves the particles faster

Melting Point-the temperature needed to melt an object. Is different for every object. (ice-0 c)

2. **Boiling** –liquid to a gas within the liquid

Evaporation- liquid to a gas escaping into the air

Adding energy to a liquid increases the temperature and moves the particles faster

Boiling Point-the temperature needed to boil a Liquid. (water- 100 c)

As the pressure decreases, the boiling point decreases because the gas can escape the liquid easier. This is because the gas has a higher volume (more spread out)

People in Denver (high altitude, low pressure)

Can boil water at 96°C

3. **Sublimation**- a solid directly to a gas

Example – dry ice

Exothermic- Removing or Decreasing Energy

Condensation-gas to a liquid (opposite of evaporation)

When energy is taken away from a gas, the temperature decreases and the particles slow down

Condensation Point-the temperature at which a gas turns into a liquid (same temp as its boiling point)

Freezing- liquid to a solid (opposite of melting)

When energy is taken away from a liquid, the temperature decreases and the particles slow down.

Freezing Point –the temperature at which a liquid turns to a solid (same temp as its melting point)

Changing State and Changing Temperature

When a change of state is taking place, there is no increase or decrease in temperature.

Example

While ice is melting, the temperature remains 0 c until the ice is completely water.